WHAT IS CLAIMED IS:

1. A steel for use in high strength pinion shaft comprising, on the basis of mass%; C: 0.45 - 0.55%, Si: 0.10 - 0.50%, Mn: 0.50 - 1.20%, P: 0.025% or less, S: 0.025% or less, Mo: 0.15 - 0.25%, B: 0.0005 - 0.005%, Ti: 0.005 - 0.10% and N: 0.015% or less, satisfying the following relations 1 and 2 and the balance comprising Fe and inevitable impurities:

Relation 1

$$0.80 \leqq Ceq \leqq 0.95$$

where $Ceq = C + 0.07 \times Si + 0.16 \times Mn + 0.20 \times Cr + 0.72 \times Mo$

Relation 2

$$f\ value \leqq 1.0$$

where $f\ value = 2.78 - 3.2 \times C + 0.05 \times Si - 0.60 \times Mn - 0.55 \times Cu - 0.80 \times Ni - 0.75 \times Cr$

2. A steel for use in high strength pinion shaft according to claim 1, wherein one or more of Cu: 0.50% or less, Ni: 0.50% or less and Cr: 0.50% or less is contained instead of a portion of the balance of Fe described above.

3. A steel for use in high strength pinion shaft according to claim 1, wherein one or more of Nb: 0.20% or less, Ta: 0.20% or less, Zr: 0.10% or less, and Al: 0.10% or less is contained instead of a portion of the balance of Fe

described above.

4. A steel for use in high strength pinion shaft according to claim 2, wherein one or more of Nb: 0.20% or less, Ta: 0.20% or less, Zr: 0.10% or less, and Al: 0.10% or less is contained instead of a portion of the balance of Fe described above.

5. A steel for use in high strength pinion shaft comprising, on the basis of mass %; C: 0.45 - 0.55%, Si: 0.10 - 0.50%, Mn: 0.50 - 1.20%, P: 0.025% or less, S: 0.025% or less, Mo: 0.15 - 0.25%, B: 0.0005 - 0.005%, Ti: 0.005 - 0.10% and N: 0.015% or less, satisfying the following relations 1 and 2 and the balance comprising Fe and inevitable impurities, in which the tissue after hot rolling is a 3-phase texture of ferrite + pearlite + bainite, the ferrite area ratio is 40% or less and the maximum pearlite block size is 100 μm or less in a circle-equivalent diameter, the hardness after hot rolling is 24 to 30 HRC, the surface hardness after high frequency hardening is 650 HV or higher, and the old austenite crystal grain size in the hardened layer is 8 or more in view of grain size number;

Relation 1

$$0.80 \leqq Ceq \leqq 0.95$$

where $Ceq = C + 0.07 \times Si + 0.16 \times Mn + 0.20 \times Cr + 0.72 \times Mo$

Relation 2

$$f \text{ value} \leqq 1.0$$

where $f \text{ value} = 2.78 - 3.2\times C + 0.05\times Si - 0.60\times Mn - 0.55\times Cu - 0.80\times Ni - 0.75\times Cr$

6. A steel for use in high strength pinion shaft according to claim 5, wherein one or more of Cu: 0.50% or less, Ni: 0.50% or less and Cr: 0.50% or less is contained instead of a portion of the balance of Fe described above.

7. A steel for use in high strength pinion shaft according to claim 5, wherein one or more of Nb: 0.20% or less, Ta: 0.20% or less, Zr: 0.10% or less, and Al: 0.10% or less is contained instead of a portion of the balance of Fe described above.

8. A steel for use in high strength pinion shaft according to claim 6, wherein one or more of Nb: 0.20% or less, Ta: 0.20% or less, Zr: 0.10% or less, and Al: 0.10% or less is contained instead of a portion of the balance of Fe described above.

9. A method of manufacturing a steel for use in high strength pinion shaft in which a steel comprising, on the basis of mass %; C: 0.45 - 0.55%, Si: 0.10 - 0.50%, Mn: 0.50

- 1.20%, P: 0.025% or less, S: 0.025% or less, Mo: 0.15 - 0.25%, B: 0.0005 - 0.005%
Ti: 0.005 - 0.10%, and N: 0.015% or less, and satisfying the following relations 1 and 2 and the balance comprising Fe and inevitable impurities: is fabricated or worked under a draft ratio at an area reduction of 10% or more, at a temperature of 850°C or lower:

Relation 1

$$0.80 \leqq Ceq \leqq 0.95$$

in which $Ceq = C + 0.07 \times Si + 0.16 \times Mn + 0.20 \times Cr + 0.72 \times Mo$

Relation 2

$$f \text{ value} \leqq 1.0$$

in which $T_{Tr} = 2.78 - 3.2 \times C + 0.05 \times Si - 0.60 \times Mn - 0.55 \times Cu - 0.80 \times Ni - 0.75 \times Cr$

10. A method of manufacturing a steel for use in high strength pinion shaft according to claim 9, wherein one or more of Cu: 0.50% or less, Ni: 0.50% or less, and Cr: 0.50% or less is contained instead of a portion of the balance of Fe.

11. A method of manufacturing a steel for use in high strength pinion shaft according to claim 9, in which one or more of Nb: 0.20% or less, Ta: 0.20% or less, Zr: 0.10% or less, and Al: 0.10% or less are contained instead of a

portion of the balance of Fe.

12. A method of manufacturing a steel for use in high strength pinion shaft according to claim 10, in which one or more of Nb: 0.20% or less, Ta: 0.20% or less, Zr: 0.10% or less, and Al: 0.10% or less are contained instead of a portion of the balance of Fe.